### Measurement condition

Ambient temperature: 23 °C
Input power level: 0 dBm
Terminating impedance: *
Input: 200 Ω || -0,64 pF
Output: 75 Ω

### Characteristics

Remark:
The nominal frequency $f_N$ is fixed at 1284,0 MHz. The insertion loss $a_e$ is defined as loss value determined at $f_N$. Reference level for the relative attenuation $a_{rel}$ of the TFS 1284 is the insertion loss $a_e$. All specified data are met within the operating temperature range.

| D a t a | | typ. value | | tolerance / limit | | |
|---|---|---|---|---|---|---|
| **Insertion loss** (reference level) | $a_e$ | 2,1 | dB | max. | 3,0 | dB |
| **Nominal frequency** | $f_N$ | - | | | 1284,0 | MHz |
| **Passband** | PB | - | | $f_N$ ± | 20,0 | MHz |
| **Pass band variation** | | 1,5 | dB | max. | 2,0 | dB |
| **Relative attenuation** | $a_{rel}$ | | | | | |
| 0,3 MHz ... 860 MHz | | 59 | dB | min. | 55 | dB |
| 860 MHz ... 1165 MHz | | 50 | dB | min. | 46 | dB |
| 1165 MHz ... 1192,3 MHz | | 49 | dB | min. | 43 | dB |
| 1376 MHz ... 1492,2 MHz | | 46 | dB | min. | 33 | dB |
| 1492,2 MHz ... 2000 MHz | | 46 | dB | min. | 43 | dB |
| 2000 MHz ... 2500 MHz | | 43 | dB | min. | 36 | dB |
| 2500 MHz ... 6000 MHz | | 27 | dB | min. | 15 | dB |
| **Group delay ripple** | | | | | | |
| 1265 MHz ... 1302,9 MHz | | 12 | ns | max. | 20 | ns |
| **Input VSWR within PB** | | 2,0:1 | | max. | 2,4 : 1 | |
| **Output VSWR within PB** | | 2,0:1 | | max. | 2,4 : 1 | |
| **CMRR *** within PB** | | 26 | dB | min. | 20 | dB |
| **Permissible DV voltage** | | - | | max. | 0 | V |
| **Input power level** | | - | | max. | 10 | dBm |
| **Operable temperature range** | | - | | - 30 °C ... + 80 °C | | |
| **Operating temperature range** | OTR | - | | - 20 °C ... + 50 °C | | |
| **Storage temperature range** | | - | | - 50 °C ... +125 °C | | |
| **Temperature coefficient of frequency** | $TC_f$ ** | -46 | ppm/K | | - | |

*) The terminating impedances depend on parasitics and q-values of matching elements and the board used, and are to be understood as reference values only. Should there be additional questions do not hesitate to ask for an application note or contact our design team.
**) $\Delta f(Hz) = TC_f(ppm/K) \times (T-T_0) \times f_{T0}(MHz)$
***)CMRR: Common Mode Rejection Ratio

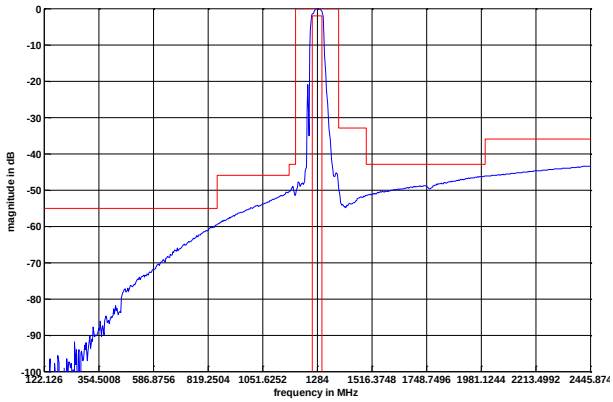
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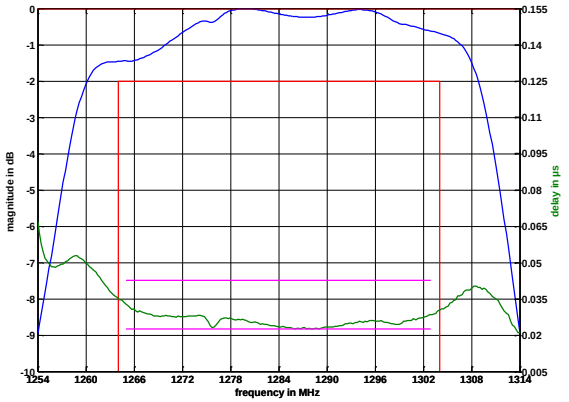
**Checked / Approved:**

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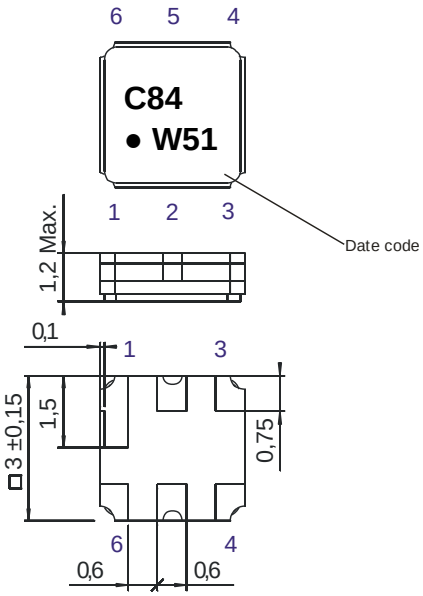
## Filter characteristic




## Construction and pin connection

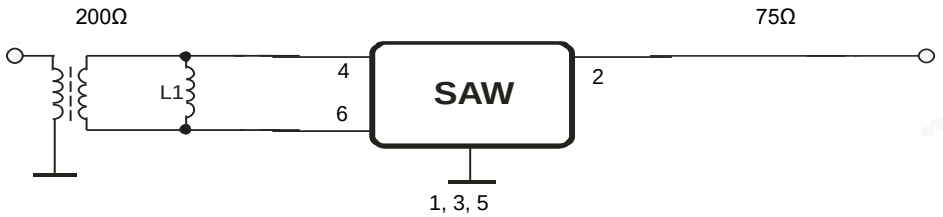
(All dimensions in mm)




| | |
|---|---|
| 1 | Ground |
| 2 | Output |
| 3 | Ground |
| 4 | Input |
| 5 | Ground |
| 6 | Input |

| Date code: | Year + week |
|---|---|
| W | 2008 |
| X | 2009 |
| A | 2010 |
| ... | |

## 200 Ohm / 75 Ohm Test circuit




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### Stability characteristics, reliability

After the following tests the filter shall meet the whole specification:

1. Shock: 500g, 1 ms, half sine wave, 3 shocks each plane;
   DIN IEC 68 T2 - 27

2. Vibration: 10 Hz to 500 Hz, 0,35 mm or 5 g respectively, 1 octave per min, 10 cycles per plan, 3 plans;
   DIN IEC 68 T2 - 6

3. Change of temperature: -55 °C to 125°C / 30 min. each / 10 cycles
   DIN IEC 68 part 2 – 14 Test N

4. Resistance to solder heat (reflow): reflow possible: three times max.;
   for temperature conditions refer to the attached "Air reflow temperature conditions" on page 4;

This filter is RoHS compliant (2002/95/EG, 2005/618/EG)

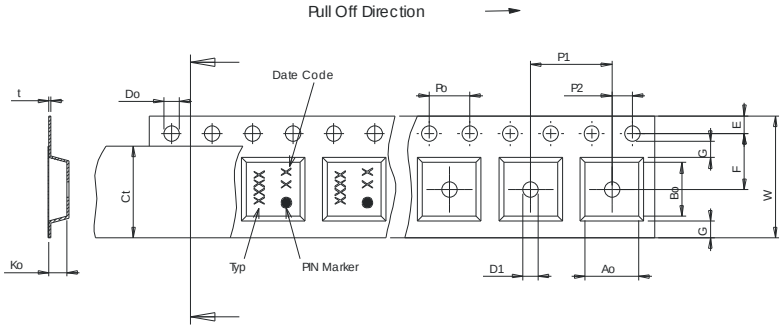
### Packing

Tape & Reel: IEC 286 – 3, with exception of value for N and minimum bending radius;
tape type II, embossed carrier tape with top cover tape on the upper side;

| | |
|---|---|
| max. pieces of filters per reel: | 9000 |
| reel of empty components at start: | min. 300 mm |
| reel of empty components at start including leader: | min. 500 mm |
| trailer: | min. 300 mm |

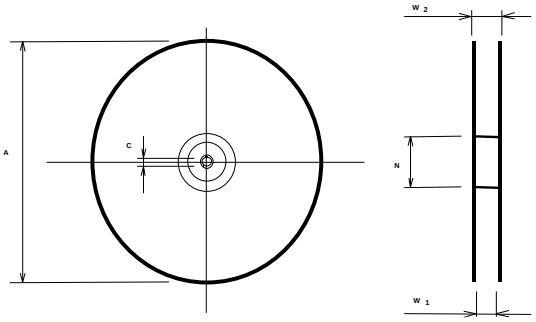
**Tape (all dimensions in mm)**

| | | |
|---|---|---|
| W | : | 8,00 ± 0,3 |
| Po | : | 4,00 ± 0,1 |
| Do | : | 1,50 +0,1/-0 |
| E | : | 1,75 ± 0,1 |
| F | : | 3,50 ± 0,05 |
| G(min) | : | 0,75 |
| P2 | : | 2,00 ± 0,05 |
| P1 | : | 4,00 ± 0,1 |
| D1(min) | : | 1,50 |
| Ao | : | 3,25 ± 0,1 |
| Bo | : | 3,25 ± 0,1 |
| Ct | : | 5,5 ± 0,1 |




**Reel (all dimensions in mm)**

| | | |
|---|---|---|
| A | : | 330 |
| W1 | : | 8,4 +1,5/-0 |
| W2(max) | : | 14,4 |
| N(min) | : | 50 |
| C | : | 13,0 +0,5/-0,2 |




The minimum bending radius is 45 mm.

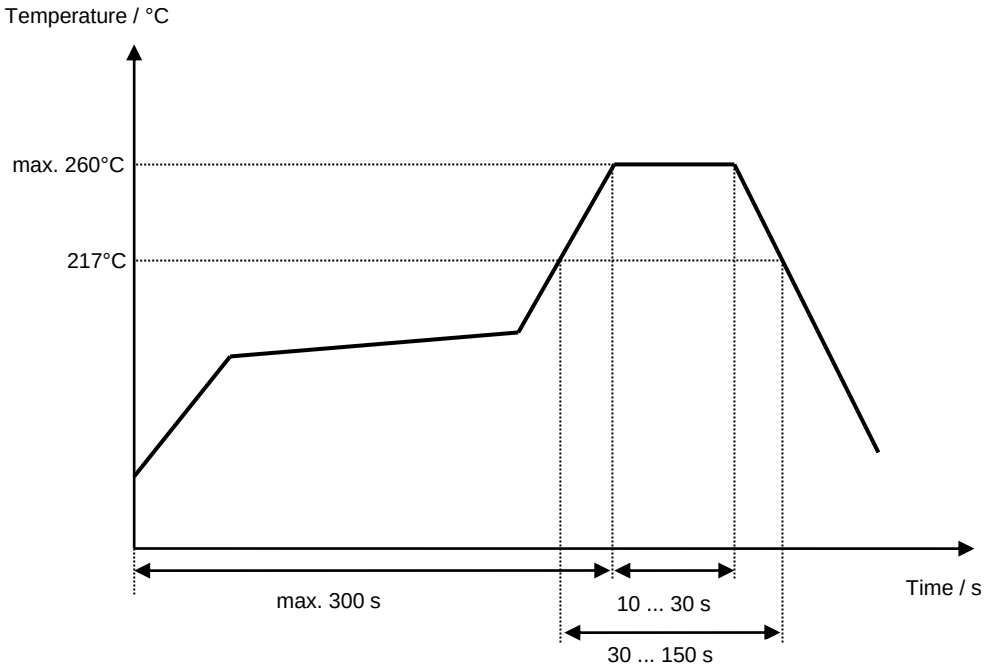
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**Air reflow temperature conditions**

| **Conditions** | **Exposure** |
|---|---|
| Average ramp-up rate (30°C to 217°C) | less than 3°C/second |
| > 100°C | between 300 and 600 seconds |
| > 150°C | between 240 and 500 seconds |
| > 217°C | between 30 and 150 seconds |
| Peak temperature | max. 260°C |
| Time within 5°C of actual peak temperature | between 10 and 30 seconds |
| Cool-down rate (Peak to 50°C) | less than 6°C/second |
| Time from 30°C to Peak temperature | no greater than 300 seconds |

**Chip-mount air reflow profile**




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## History

| Version | Reason of Changes | Name | Date |
|---|---|---|---|
| 1.0 | - Generation of development specification | Strehl | 19.06.2007 |
| 1.1 | - Change and add data | Strehl | 18.07.2007 |
| 1.2 | - Change pass band variation, attenuation and VSWR | S. Channaa | 15.01.2008 |
| 1.3 | - Change insertion loss, passband, VSWR<br>- Change attenuation and OTR | S. Channaa | 12.02.2008 |
| 1.4 | - Change attenuation, group delay ripple and vswr<br>- Add typical values, filter characteristic, generation of filter specification | S. Channaa | 05.05.2008 |
| 1.5 | - Correct construction | Strehl | 06.06.2008 |
| 1.6 | - Change Input power level | S. Channaa | 19.12.2008 |

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